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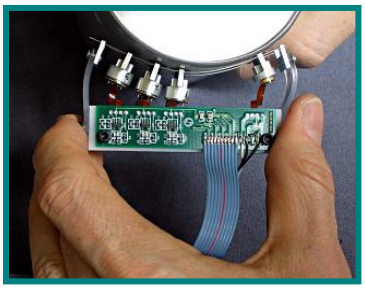
Improving Warfighter Performance through Partnerships

I am a US Navy Medical Service Corps Officer and have had the honor of being a program manager at DARPA for nearly five years. During that time, I have successfully utilized the SBIR program to achieve important technical breakthroughs and complement my core programs. I want to share with you some of my experiences as a program manager working with SBIRs.

The SBIR program allowed me to quickly investigate technically challenging topics. SBIR topics come directly from program managers who are developing and managing DARPA's core efforts. It is only a matter of a few months from a program manager's spark of an idea to the publication of a topic, to the selection of performers and the subsequent award of contracts.

My program, Improving Warfighter Information Intake Under Stress, benefited from the SBIR program. The basic premise of my idea was to quantitatively assess the cognitive state of the warfighter and then modify their information systems based on that assessment, in real time.

To enable this technology, I needed to develop and use sensors, algorithms, and gauges to non-intrusively measure and classify the neurophysiological activity associated with cognition. Small businesses made this possible.



One requirement for my program was to dramatically advance brain signal detection capabilities. One of the high-risk, high-payoff applications developed is a dense-array EEG system that gives us more accurate information about the electrical activity in the brain. One SBIR-funded company, is working to simultaneously use this technology with fNIR to get the best possible insight into cognitive activity.

As the program matured to focus on operational environments, novel methods to allow brain sensing technologies like EEG became necessary. This is quite a challenge when you realize that the signals being sensed are at the microvolt level. Another SBIR-funded company is developing new sensors will drastically improve contact impedance, time to acquire good quality signals and ease-of-use.

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Another challenge in operationalizing technologies required the development of advanced, wireless systems that incorporate operational-quality sensing technologies. Another SBIR-funded firm created systems using EEG technologies and drastically improved the quality of the cognitive state measurement.

Lastly, advanced, wireless, functional near infra-red sensing technologies are now beginning to be developed that rival, and even outperform, traditional sensing technologies. Systems developed by an SBIR-funded company have demonstrated real-time spatial and temporal imaging of brain activity.

All of these developments required extraordinary technical innovation, innovation that would not have occurred without the SBIR program. These technologies are also being used by these companies to develop commercial products that will enable military and non-military applications to dynamically adapt to users and maximize performance.

My use of the SBIR program has been a success, and it was largely the result of efforts by people like you. As a program manager, I used the SBIR program to enhance my core efforts by tackling some of the hardest technological problems through. As a researcher, you can apply to existing topics and jumpstart your involvement in some of the most exciting technology efforts in your research community. But, don't stop there. You can also contribute to potential SBIR topics by engaging program managers with ideas for new areas of research and technology development.

Please take some time to explore how the SBIR program might impact your ideas and your organization. I hope that many of you who have not previously participated in some fashion will consider doing so, and that those of you who are already familiar with the program will continue to take advantage of this opportunity.